NATIONAL INSTITUTES OF HEALTH
STATE-OF-THE-SCIENCE CONFERENCE STATEMENT
Preventing Violence and Related Health-Risking
Social Behaviors in Adolescents
October 13–15, 2004

NIH consensus and state-of-the-science statements are prepared by independent panels of health professionals and public representatives on the basis of (1) the results of a systematic literature review prepared under contract with the Agency for Healthcare Research and Quality (AHRQ), (2) presentations by investigators working in areas relevant to the conference questions during a 2-day public session, (3) questions and statements from conference attendees during open discussion periods that are part of the public session, and (4) closed deliberations by the panel during the remainder of the second day and morning of the third. This statement is an independent report of the panel and is not a policy statement of the NIH or the Federal Government.

The statement reflects the panel's assessment of medical knowledge available at the time the statement was written. Thus, it provides a "snapshot in time" of the state of knowledge on the conference topic. When reading the statement, keep in mind that new knowledge is inevitably accumulating through medical and behavioral research.

Background

The National Institutes of Health (NIH) convened a State-of-the-Science Conference on Preventing Violence and Related Health-Risking Social Behaviors in Adolescents on October 13–15, 2004. The National Institute of Mental Health (NIMH) and the Office of Medical Applications of Research (OMAR) of the NIH were the primary sponsors of this meeting. The Agency for Healthcare Research and Quality (AHRQ), the Centers for Disease Control and Prevention, the National Institute on Alcohol Abuse and Alcoholism, the National Institute of Child Health and Human Development, the National Institute on Drug Abuse, the National Institute of Nursing Research, the National Library of Medicine, the Office of Behavioral and Social Sciences Research, the Substance Abuse and Mental Health Services Administration, the U.S. Department of Education, and the U.S. Department of Justice were the cosponsors.

AHRQ supported the NIH State-of-the-Science Conference on Preventing Violence and Related Health-Risking Social Behaviors in Adolescents through its Evidence-based Practice Center program. Under contract to the AHRQ, the Southern California Evidence-based Practice Center (SC-EPC) and its partner, Childrens Hospital Los Angeles, developed the systematic review and analysis that served as one of the references for discussion at the conference. The National Library of Medicine, in collaboration with the SC-EPC and Childrens Hospital Los Angeles, conducted the literature search for the systematic review.

This two-and-a-half-day conference at the NIH examined and assessed the current state of knowledge regarding adolescent violence and related health-risking social behavior and identified directions for future research.

Experts presented the latest research findings on risk and protective factors involved in the development of adolescent violence and related behaviors and on interventions to reduce those behaviors. After a day-and-a-half of presentations and public discussion, an independent panel weighed the available evidence and drafted a statement addressing the following key questions:

- What are the factors that contribute to violence and associated adverse health outcomes in childhood and adolescence?

- What are the patterns of co-occurrence of these factors?

- What evidence exists on the safety and effectiveness of interventions for violence?

- Where evidence of safety and effectiveness exists, are there other outcomes beyond reducing violence? If so, what is known about effectiveness by age, sex, and race/ethnicity?

- What are the commonalities among interventions that are effective and those that are ineffective?

- What are the priorities for future research?

On the final day of the conference, the panel chairperson read the draft statement to the conference audience and invited comments and questions. A press conference followed to allow the panel to respond to questions from the media.

Introduction

Violence affects all of us at some level and represents an issue of vital national and international importance. As upsetting as violence in general may be, the notion of our children engaging in significant violence is particularly distressing. While rates of adolescent violence have decreased from their peak levels of a decade ago, violent crime rates and consequences remain high and are substantially higher in the United States than in most industrial countries. Thus, adolescent violence is a public health issue of the highest level of concern with tremendous human and economic costs.

The field of adolescent violence prevention is complicated by the fact that it involves multiple scientific disciplines (e.g., medicine, nursing, psychology, sociology, architecture and civil engineering, economics, social work, criminology) and a multitude of professional jurisdictions (e.g., education, public health agencies, law enforcement, legislatures, the judiciary system). Each of these constituencies has different conceptualizations of the problem, including different terminologies, different intellectual as well as financial stakes in its origins and putative

solutions, and differing views on approaches to its resolution. And yet, to effectively address adolescent violence, common perspectives, research agendas, and implementation plans must be developed.

A Maturing and Promising Field

The field of adolescent violence prevention has many strengths. The involvement of many highly-productive, creative investigators has allowed the field to advance considerably over the past two decades. Research has suggested the existence of distinct trajectories potentially leading toward violence with different intervention implications. Numerous developmental antecedents of violence and related behaviors and of risk constructs have been identified.

We can, today, identify a variety of interventions addressing children and youth across developmental and risk involvement spectra that have evidence of effectiveness even when stringent criteria are established for this designation.

In addition, current trends offer the capacity for future gains in this field, including the establishment of specific, articulated criteria for the categorization of intervention effectiveness and a system for evaluating and disseminating information on cost effectiveness. Although this potential has not yet been fully realized, the plethora of fields and disciplines involved in adolescent violence prevention allows for extensive methodological and design cross-fertilization.

Opportunities for Further Advances in the Field

Great advances have already been made within the violence prevention research field; more substantive advances will be possible when this field further integrates advances in methodology, theory, and conceptualization from other related fields. Theory can be further used, as it has in other fields, to develop specific intervention components and corresponding evaluations of putative determinants of intervention effect. Such efforts enable a progressive research development process in which one generation of studies informs the next iteration of intervention efforts across disciplinary lines. Likewise, as has been recognized in other disciplines, community-based effectiveness trials may require different experimental paradigms.

To date, there has been relatively minimal incorporation of new developments in researchers' understanding of the human genome and human brain development into the field of violence prevention. Much has been learned over the past decade about understanding behavior and behavioral change in differing ethnic and cultural groups, but this growing knowledge base does not appear to be reflected in many violence prevention efforts. In addition, substantial evidence from other fields and a growing body of evidence within the field of violence prevention speak to the need to examine possible adverse effects as well as beneficial effects of suggested interventions. Moreover, the violence prevention field, while admirably struggling with questions of bringing research to wider scale implementation, does not appear to have benefited fully from the experience of other research fields in this regard. Intervention efforts in other fields have been able to take advantage of potentially strategic moments such as those that might occur for violence prevention in the emergency room or at the police department with

victims and/or perpetrators of violence. Efforts to draw upon the research findings from these disparate fields will be hampered until a common research language has been developed and agreed upon—and data is widely shared.

Even within the field of violence prevention, the extent to which interventions have been based on significant epidemiologic and behavioral findings within the field remains opaque. For example, it is not clear whether the existing interventions have adequately recognized the likelihood of differing risk trajectories and how intervention effects may differ depending on whether youth violence reflects early-onset violent behaviors that are likely to endure or later-onset, adolescent-limited violent behaviors that cease with the transition to adulthood, or if they endure, are likely to have shorter trajectories.

Organization of the Remainder of This Paper

The panel has responded to the six questions posed by the conveners of this conference. The panel's responses are intended to highlight the complexities of the field and to indicate the panel's perceptions of the directions in which future gains can be made. The panel understands and wishes to state that responding to the directions implied in its comments will require the development of interdisciplinary investigative methods and innovative transdisciplinary interventions. Moreover, such responses will require realignment of funding sources for both research and the implementation of effective programs.

1. **What are the factors that contribute to violence and associated adverse health outcomes in childhood and adolescence?**

The term adolescent violence is used to encompass a broad spectrum of behaviors ranging from bullying at school to murder. While the greatest concern is about violent behaviors like aggravated assault, armed robbery, rape, and homicide, many studies focus on more serious violence precursors, such as delinquency, physical aggression, or antisocial behavior.

Identifying risk factors for adolescent violence allows us to better understand which adolescents are likely to become violent—and to learn how to reduce violence. In this context, a risk factor is any characteristic or behavior that is associated with an increased chance that a young person will become violent. Factors that reduce the chance of violence are called protective factors. Risk factors can be useful in identifying people who are at high risk of violence. It should be emphasized, however, that having a risk factor does not mean a person will be violent; it just means that he or she is more likely to be violent than a similar person without the factor.

Some risk factors are causal. That is, the presence of the factor leads directly to violent behavior. Knowing about causal risk factors helps point to how to intervene. A causal relationship is suggested if the risk factor precedes the outcome, if the association is strong and consistent, and if there is a plausible underlying theory that predicts the relationship. To the extent that causal factors are modifiable, removing the risk factor will reduce the chance of violence.

Finally, risk factors can serve another function. When a risk factor reliably predicts the outcome of interest, the factor can be thought of as a proxy for the outcome. That is, interventions that can be shown to reduce the prevalence of the risk factor are likely to reduce the chance of the outcome itself. Such proxy outcomes are useful when the outcome of interest is rare, removed in time, or difficult to measure. Identifying good proxy measures for adolescent violence would help researchers conduct studies of reasonable size and duration by focusing on more common outcomes that are violence precursors, such as physical aggression.

Reflecting the importance of the issue, there is a growing body of literature regarding possible risk factors for adolescent violence. Because the studies come from multiple disciplines and employ a variety of study designs, it is difficult to summarize them succinctly. Moreover, the field is limited by a lack of consistent language in defining violence and in how putative risk factors are defined and measured. Further complications arise from the fact that the strength of a risk factor may change as an individual ages and may be modified by personal experience or changing social contexts.

Nonetheless, drawing on longitudinal studies in the United States and elsewhere, researchers have been able to draw a number of consistent inferences.

A number of analyses have attempted to identify factors that are shown to be associated with adolescent violence and related proximate outcomes like delinquency across research studies and populations using meta-analytic approaches. These analyses rely on data from longitudinal studies of children as they transition into adolescence and adulthood. The types of risk factors that have been examined commonly include characteristics of individual children and youth, their families, their schools, and their communities, reflecting both individual and ecological perspectives. Some specific factors have consistently emerged as antecedent situations or characteristics that are associated with increased or decreased probabilities of violence. For example, being male has consistently been identified as a risk factor for violence because male youth are much more likely to engage in violent behavior than female youth. Analyses of other factors, such as race/ethnicity or parental socioeconomic status, have produced ambiguous results.

There is evidence suggesting that adolescent violence develops along distinct trajectories, each with different natural histories and sets of risk and protective factors. For example, there is evidence for an early-onset form of violence that commonly persists well into adulthood as well as a later-onset and limited-duration form of adolescent violence that ceases with the transition to adulthood, or if it persists, has a shorter trajectory. Regardless of the trajectory, risk and protective factors differ by developmental stage. Examples of individual-level risk factors that are important in early childhood are incidents of the child fighting, crimes or status offenses, victimization, or childhood substance use. At the family level, risk factors include inconsistent or harsh parenting and family conflict. In contrast, poor peer relations, involvement in gangs, lack of connection to school, and living in a violent neighborhood emerge as important risk factors in adolescence rather than in early childhood.

Further research and analysis needs to focus on identifying the causal pathways between risk and protective factors and adolescent violence using longitudinal studies of representative

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samples of children and youth. Oversampling of areas with high prevalence of adolescent violence will be necessary to ensure adequate numbers of violent behaviors. Collecting contextual information about the survey respondents' school and neighborhood environments will greatly improve the utility of surveys. Promising areas for further research include identifying factors associated with the observed decline in the late-onset form of adolescent violence and examining the possible association of violence in media and video games with behaviors.

2. **What are the patterns of co-occurrence of these factors?**

In the violence literature, the term co-occurrence often refers to the observation that adolescents who commit violent acts also tend to engage in other dangerous behaviors (e.g., substance abuse, physical aggression, delinquency). These co-occurring behaviors should be considered comorbidities. In this section, we describe the state of the science on how various risk factors cluster.

In general, the identification of co-occurring predictive risk factors and the explication of relationships between them is complex. The concurrent presence of two or more risk factors as predictors of a particular outcome can be due to the factors' independent prediction of the outcome or to the moderation of the effect of one risk factor by levels of another (synergism or interaction). For example, an aggressive child may only become violent when parenting skills fall short in certain ways. Competent parenting skills, such as monitoring, consistent discipline, and supportiveness, may reduce the likelihood of the child engaging in more violent, antisocial behaviors. Further, one risk factor may be mediated by the presence of another factor in the causal pathway toward serious violence. For example, when low socioeconomic status or low family income is studied alone, it appears to be an important risk factor. However, when other factors are taken into account in statistical models, the effect of socioeconomic status diminishes or disappears—suggesting that other factors explain the effect of socioeconomic status on violence.

In violence, there is even more complexity. Co-occurring factors can operate at multiple levels (e.g., individual, contextual) and may differ by subgroups of the population (e.g., gender, ethnicity, urban/rural, cultural groups, developmental stage) and by the type and severity of the violent outcome studied. In addition, the ability to identify risk factors will vary by the quality of the measurement and research design. For example, individual child characteristics predictive of serious violence must be understood in the context of family, peer group, school, and community contextual risk factors, which vary over developmental stages and in different settings. Analytic advances in statistical methodology (e.g., structural equation models with latent class variables, hierarchical linear models) aid the understanding of the complex dynamics of time-varying risk factor constructs during the life course of youth in studies of developmental trajectories. The research evidence, however, is not adequate to untangle the dynamics of the co-occurrence of risk factors or their developmental trajectories. To understand these dynamics, there must be more long-term cohort studies that measure a rich set of risk factors (including individuals, families, peers, and neighborhoods) in diverse populations and that are analyzed using state-of-the-art statistical methods.

3. **What evidence exists on the safety and effectiveness of interventions for violence?**

The good news is that there are a number of intervention programs that have been shown in high-quality randomized controlled trials (RCTs) to reduce either arrests or violence precursors. The Blueprints for Violence Prevention prepared by the University of Colorado Center for the Study and Prevention of Violence used the following criteria to certify the effectiveness of programs designed to reduce substance abuse, delinquency, or violence: (1) experimental design (RCT); (2) statistically significant positive effect; (3) effect sustained for at least 1 year postintervention; (4) at least one external RCT replicating the results; (5) RCTs adequately address threats to internal validity; and (6) no known health compromising side effects.

Two programs reducing arrests for violent crimes or violence precursors met all the criteria: Functional Family Therapy and Multisystemic Therapy. Functional Family Therapy is a short-term family-based prevention and intervention program to treat high-risk youth and their families. Participating youth and families attend 12 1-hour sessions (and up to 30 sessions for difficult cases) over 3 months. Program evaluations demonstrate reductions in rearrest rates, violent crime arrests, and out-of-home placements that were sustained over 4 years. Multisystemic Therapy provides community-based clinical treatment for violent and chronic juvenile offenders who are at risk for out-of-home placement. The average duration of treatment is about 4 months, which includes approximately 60 hours of therapist–family contact. Therapists with low case loads (4–6 families), available 24 hours a day, 7 days a week, provide the treatment. Program evaluations have demonstrated reductions in long-term rates of rearrest, violent crime arrest, and out-of-home placements. Positive results were maintained for nearly 4 years after treatment ended.

Six programs addressing arrest or violence precursors were classified as "effective with reservation;" that is, they only had internal rather than external RCT replications. Those programs include: Big Brothers Big Sisters (e.g., reduction in hitting); Multidimensional Treatment Foster Care (e.g., reduction in incarceration); Nurse Family Partnership (e.g., reduction in arrests, crime); Project Towards No Drug Abuse (e.g., reduction in weapon carrying); Promoting Alternative Thinking Strategies (e.g., reduction in peer aggression); and Brief Strategic Family Therapy (e.g., reduction in conduct disorder, socialized aggression).

Safety, however, is much more difficult to assess because the intervention literature does not report systematically on safety (side effect) issues. Among the most important safety issues to be considered is the hazard of "contagion." When young people with delinquent proclivities are brought together, the more sophisticated can instruct the more naïve in precisely the behaviors that the intervener wishes to prevent. This provides a substantial objection to programs that aggregate violent youth rather than providing an individualized home and school-based treatment program. Even when treatments are individualized, contagion is possible. For example, clinical interventions may facilitate interactions between clients on the way to and from program activities as well as on program premises (e.g., "hanging out" at the clinic, using common public transportation, creating friendship networks as the result of having met in the treatment program).

The evidence indicates that "scare tactics" don't work and there is some evidence that they may make the problem worse rather than simply not working. One of the hazards of the juvenile court system is the impact of having a record on the child's subsequent life course. Such evidence as there is indicates that group detention centers, boot camps, and other "get tough" programs can provide an opportunity for delinquent youth to amplify negative effects on each other. The Centers for Disease Control and Prevention has reviewed evidence that indicates that laws increasing the ease of transferring juveniles to the adult judicial system are counterproductive and lead to greater violence in the juveniles moving through the adult systems without deterring juveniles in the general population from violent crime.

In other fields, it has been shown that identifying children as being at risk has its own hazards. Labeling a child as deficient in some respect may lead to a self-fulfilling prophecy. Researchers must be certain that similar problems do not happen here.

Ineffective programs may not harm the participants directly (although some do) but they may have an important toxic effect nonetheless; namely the "opportunity cost" of funds misspent on an unsuitable program that might have been spent on an effective one.

The juvenile violence literature does not pay enough attention to secular effects and ecological change and their consequences for life trajectories. What, for example, is the impact of an intervening economic recession, the dismantling of a housing project, or the gentrification of the neighborhood? There is little in the juvenile violence literature that rigorously addresses such questions. Because secular change is so significant in modern life, this becomes a significant problem for longitudinal studies. That is, the life circumstances when youngsters enter a study may have changed so greatly by the time they enter the age of risk that the findings based on one cohort no longer apply to the new generation of youngsters. This is an argument for employing accelerated longitudinal designs in epidemiologic studies; that is, entering cohorts of different age (e.g., 1 year, 5 years, 9 years) at the beginning of the study so that after a followthrough of 4 years, one can have a sample extending from 1 to 21 (instead of waiting 21 years).

The difficulty of doing sophisticated meta-analytic studies of intervention outcomes is compounded by the fact that different investigators often do not collect similar data or report them in a standard fashion. Indeed, no meta-analysis of individual-level data has ever been done in the field of violence. We strongly recommend that the Federal agencies concerned with violence (U.S. Department of Health and Human Services, U.S. Department of Labor, U.S. Department of Justice, and U.S. Department of Education) jointly convene a meeting of leading investigators with the aim of achieving consensus on a core of common data elements to make such comparisons possible. Investigators would obviously be free to collect additional data but all studies would collect at least these elements. Further, all data sets ought to be deposited at a common site, established, for example, by the National Library of Medicine, so that the data can be reexamined through pooling of data by all investigators (with proper controls for protecting privacy and guaranteeing the rights of the individual investigator). In addition, a national adolescent violence registry modeled on the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program should be considered. (SEER is a population-based registry of cancer incidence, treatment, and outcomes.)

To promote the translation of research studies in the service settings, there is a need for additional economic research on the cost effectiveness of different programs. One such project has been undertaken by the Washington State Institute for Public Policy. This economic analysis attempts to make available data on the cost savings produced by an intervention compared to the cost of the intervention itself. This makes it possible to discard both ineffective services and costly services that bring only a small benefit and, in principle, to redirect the available funds toward cost-effective interventions. An additional problem is that effective programs are often not widely implemented. There needs to be more emphasis on the implementation and dissemination of these programs.

In both theory-based research and bringing programs to scale, it is necessary to address the competing needs for fidelity in program implementation and the need for local "ownership" of a program, which generally includes modification of the intervention. Successful programs require repeated review and careful supervision to maintain the fidelity of the intervention and the enthusiasm of the interveners. Continuing education, supervision, and technical assistance for staff, as well as periodic surveys of outcomes to be fed back to staff, are important to maintain program morale.

Because of the nature of the problem studied, diversity among researchers and implementers is of particular importance. Federal agencies, universities, and funders must develop programs to increase diversity among investigators and service-delivering personnel. This is not an equal opportunities employment maneuver to create jobs, but is essential to the intellectual integrity of the field itself. A more diverse group of researchers (especially a group more reflective of the populations that need service) will more likely take into account cultural factors that characterize those diverse populations and may gain easier entry into those communities. That is, a more diverse set of investigators will lead to higher quality research.

The evidence presented makes clear the role of neighborhood and community (in addition to individual and family) factors in protecting against or generating antisocial behavior. What is missing is a substantial body of research directed at changing neighborhoods to enhance their role in protecting young people. We have in mind the notion of "collective efficacy" as a constructive factor in economically-deprived neighborhoods that reduces delinquent acts in contrast to similarly deprived neighborhoods without a similar sense of efficacy. For example, when adults intervene to separate children in a fight, stop someone painting graffiti, or ask a child why he or she is out of school during school hours, this identifies an effective neighborhood that also demands trash collection, police services, and street repair—and has less youth crime. The evidence that moving children out of high-risk neighborhoods is associated with a reduction in delinquent behavior is striking. How often does this work? How feasible is it as a public policy measure? Are there negative side effects for the child or family? What is the response of the receiving neighborhood? These questions merit closer examination.

There is a long history of research attempting to identify the effects of violence in the media. Because television is but one variable in a complex set of life circumstances, it has been difficult to demonstrate long-term as opposed to short-term effects. There is even more reason for concern now that violent video games and music videos that exalt macho lifestyles have been

added to the steady diet of violence on television. The relationship between media and violence is a critical area for investigation.

The barriers to implementing clearly-effective programs inevitably include the resistance by the individuals operating ineffective programs to having their institutions closed and their jobs abolished. Often, resistance is fostered by the honest belief of those involved that what they are doing works. Hence, program ineffectiveness, like effectiveness, should be established by the highest quality research. Further, despite the evidence for intensive multisystem therapy, communities may be apprehensive at having delinquent youngsters treated in their midst as opposed to segregating them in detention centers that have the appearance of being safer by keeping the children invisible.

A conference audience member who works in a trauma center suggested that such settings provide opportunities for intervention in an escalating war of violence. Typically, trauma centers deal with the emergency itself and have no staff or space for providing ongoing care once the immediate crisis has been resolved. Federal agencies might encourage research on patients identified at trauma centers and systems for providing services to the youth, the family, and the perpetrators on a rapid response time basis.

4. **Where evidence of safety and effectiveness exists, are there other outcomes beyond reducing violence? If so, what is known about effectiveness by age, sex, and race/ethnicity?**

Successful prevention programs influence other types of outcomes besides the reduction of violence. Interventions that aim to reduce violence invariably have other outcomes on the way to that terminal objective (e.g., reducing physical aggression). Interventions that seek to decrease problematic behavior and violence typically set out to do so by reinforcing elements thought to strengthen subsequent positive behaviors. These include parenting effectiveness (e.g., communication style, behavior management, goal setting, problem solving, monitoring), individual coping on the part of the child/adolescent (e.g., impulse control, anger management, decreased risk taking, communication skills), academic achievement (e.g., school readiness, organization skills, good learning habits, reading), peer relations (e.g., conversational and other social skills), and the social climate of schools (e.g., classroom and playground management, parent–teacher collaboration). As a whole, prevention programs have had the most impact when addressing conduct problems and reducing risk behaviors (e.g., alcohol/drug use, smoking, delayed sexual initiation). More research on prevention programs by race/ethnicity and gender is indicated.

Age has demonstrated importance in shaping prevention strategies. Effective programs conceptualize interventions and the outcome measures in terms of specific and appropriate developmental stages. Indeed, some studies deliberately focus on developmentally-important transitions, such as entry into first grade or the moves to middle school and high school. Age and developmental stage are important in predicting serious delinquency or violence. Predictors of eventual delinquency in younger children may not be the same as predictors of delinquency in older children. Developmentally-appropriate family management will vary from primary school through middle and high school. Direct supervision is possible in the younger grades, but

monitoring when the adolescent has a driver's license will often take the form of teen check-ins. Age has regularly been equated with developmental stage, but that association cannot be assumed to hold within normal parameters if the child/adolescent is substantially developmentally challenged.

A number of effective interventions have been sensitive to how circumstances vary by race/ethnicity (e.g., Nurse Family Partnership and Multisystemic Therapy). More attention needs to be paid to adapting intervention protocols for diverse communities. Given the demographic changes in many neighborhoods across the Nation, there is a compelling need to implement and conduct intervention research in different racial and ethnic communities. Over the past three decades, the United States has witnessed a radical change in its racial and ethnic profile—much of it due to immigration of people from Latin and Asian countries. Since racial and ethnic groups may differ in the cultural meanings they ascribe to various facets of life, there is a compelling need for prevention science to incorporate mechanisms that make program elements responsive to and appropriate for diverse communities. For example, while parenting style may be an important construct that helps prevent violence across groups, parents and children from some families may derive different meanings from specific behaviors (e.g., eye contact). Without attending to these cultural differences, inappropriate assessments will be made about the behavior. Moreover, more intervention research in diverse communities may need to focus on different targets of intervention. Gangs, for example, are responsible for a significant proportion of violent behavior. Since racial and ethnic minorities comprise a large segment of the gang population, it seems likely that more programmatic research is needed to identify ways to intervene with gangs to prevent violence. We are in urgent need of population-based studies that deal with culture and race/ethnicity in the detail they demand. That is, children are not "Hispanic American" but Puerto Rican, Cuban, Dominican, Mexican American, etc. The label Asian American is a generic term that conceals as much as it reveals about Japanese Americans, Chinese Americans, Korean Americans, and Vietnamese Americans. In a similar way, within each of these groups, the children of concern are not "immigrants" as a generic category, but first-, second-, or third-generation immigrants.

Gender is a strong predictor for violence in that males are more likely to commit serious violence as they age. This variable is, however, one that underscores the need to continue to ask questions about whether findings in one decade hold in other times as societal norms change. There is evidence that the ratio of male to female violence has changed in the past few decades, with the gap in gendered violence rates closing by half. The rarely-studied social construction of gender roles is likely to be important in understanding the dynamics of youth violence, particularly in fleshing out why being male is a risk factor and why females are increasingly becoming juvenile offenders.

5. **What are the commonalities among interventions that are effective and those that are ineffective?**

At one time there was a suspicion that when it came to developing programs to prevent violence, nothing worked. Today it is known that efficient programs exist. The task is to identify those efficacious programs, to separate them from programs that do not work or even harm, and to discover the mechanisms that underlie treatments that are successful in preventing violence.

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That is, the task is to identify common features and components of effective versus ineffective programs. In the panel's opinion, the violence research field has not yet organized specific research efforts (i.e., across program component analyses) sufficient to do this.

A good start, however, has been made. The materials prepared for the panel in advance, and presentations made to the panel, reveal that successful interventions tend to share a constellation of characteristics. In particular, the information available allows us to identify the following common characteristics of successful programs:

- They are derived from sound theoretical rationales

- They address strong risk factors

- They involve long-term treatments, often lasting a year and sometimes much longer

- They work intensively with those targeted for treatment and often use a clinical approach

- They follow a cognitive/behavioral strategy

- They are multimodal and multicontextual

- They focus on improving social competency and other skill development strategies for targeted youth and/or their families

- They are developmentally appropriate

- They are not delivered in coercive institutional settings

- They have the capacity for delivery with fidelity

There are other interventions (for which this list is not as appropriate) that also appear to reduce subsequent problem behavior. The most prominent, perhaps, is dramatically changing neighborhood environments, as in the Moving to Opportunity intervention. In addition, any program that increases educational attainment and decreases school dropout rates is likely to have the tangential benefit of reducing violence among those who are helped.

It should be noted that, currently, few of the interventions that appear effective in reducing violence (Head Start-type programs being the notable exception) have been brought to scale (i.e., moved from demonstration programs to widespread implementation). Ultimately, a capacity to scale will be necessary for any program to have a substantial long-term impact on reducing adolescent violence. This, too, will require research and experimentation, although there is a body of knowledge on bringing health and other initiatives to scale that researchers in violence prevention can and should draw on.

Turning to programs that do not work, there are many flaws in both theory and execution that can cause an intervention to fail. The panel has been presented with evidence that identifies

some characteristics of programs that have been shown to be unsuccessful as well as factors that make prospects for success poor. Some are the obverse of factors that lead to success, such as the failure to address strong risk factors, limited duration, and developmentally inappropriate interventions. Others include:

- Programs that aggregate high-risk youth in ways that facilitate contagion (i.e., most likely to have harmful, iatrogenic effects)

- Implementation protocols that are not clearly articulated

- Staff who are not well-supervised or held accountable for outcomes

- Programs limited to scare tactics (e.g., Scared Straight)

- Programs limited to toughness strategies (e.g., classic boot camps)

- Programs that consist largely of adults lecturing at youth (e.g., classic D.A.R.E.)

In addition to these findings that appear to be supported by good evidence, there are aspects of interventions that have been studied very little but that may be important contributors to the effectiveness or ineffectiveness of programs. One dimension that merits more attention is the cultural appropriateness of programs and the cultural competency of the interveners. Another is greater involvement of relevant communities in establishing goals for, and contributing to, the design of interventions. There is also traditional punishment in juvenile facilities. We did not review this area in depth, but there appears to be little evidence of strong deterrence, and there is some evidence that youth with records of incarceration, or indeed juvenile court involvement, are later handicapped in finding employment with possible criminogenic consequences. At the same time, there may be crime-reducing benefits from incapacitation through incarceration, but as with deterrence, this is not an area we have delved into deeply.

In searching for commonalities among programs that work and flaws in those that do not, one must bear in mind that the effectiveness of treatments can be highly context dependent. Thus, a set of common characteristics that predict intervention effectiveness in one context (e.g., among adolescents or with respect to primary interventions) may not predict effectiveness in another context (e.g., among first-graders or with respect to tertiary interventions). It may, of course, also be the case that context itself is a factor that predicts intervention effectiveness. This has several important implications. First, there is unlikely to be a universal set of necessary or sufficient factors for successful treatment. Rather, what is necessary or sufficient will vary by the context in which treatments are administered, the group targeted, and the aims of the treatment. Second, research must proceed in different contexts to be sure that what works in one setting will work in others. Third, time itself is a context, and as time brings changes (e.g., proliferation of HIV, destruction of high-rise public housing developments, introduction of violent video games, spread of cell phones), programs that have worked may need to be adjusted. Thus, monitoring of program effectiveness must be ongoing. Finally, interventions cost money. Even if a program works, it may not be the most cost-effective way to achieve results. In particular, some aspects of a program may be important to its success while others are not. Even successful programs can be

improved or made more cost-effective as we come to better understand what ingredients are essential to their success and what are peripheral.

6. **What are the priorities for future research?**

- A research agenda needs to be developed that shows whether reductions in proxy measures (e.g., physical aggression, delinquency) reliably translate into reductions in actual violence.

- Federal agencies concerned with violence (U.S. Department of Health and Human Services, U.S. Department of Labor, U.S. Department of Justice, and U.S. Department of Education) should jointly convene a meeting of leading investigators with the aim of achieving consensus regarding a taxonomy for violent behavior and a minimal common data set to make possible the collection and reporting of standardized data.

- The Federal Government should establish a population-based registry of adolescent violence modeled on the National Cancer Institute's SEER program.

- In order to broaden and widen the horizons of research, Federal agencies, private foundations, and universities should increase the diversity of students in research training programs.

- Given the role of the neighborhood and community in protecting against or generating antisocial behavior, there is an urgent need for research directed at changing neighborhoods to enhance their role in protecting young people.

- More long-term cohort studies that measure a rich set of risk factors (from the individual to the contextual level) in diverse populations and that are analyzed using state-of-the-art qualitative and statistical methods are needed to untangle the dynamics of the co-occurrences of risk factors. Potential biologic markers also should be explored.

- Systematic procedures for adapting established intervention protocols need to be developed for diverse communities with special attention to race, ethnicity, culture, and immigrant status (e.g., language issues).

- Across-program component analysis should be carried out to develop a more rigorous understanding of the mechanisms that underlie successful and unsuccessful interventions.

- More research on the gendered aspect of violence is needed. In particular, we need research targeting women, given the growing percentage of women involved in violence.

- Programs should be evaluated in different contexts to be sure that apparently-important aspects of successful demonstration programs have external validity.

- More dissemination research is needed so that programs that work can be implemented more effectively in community settings. Successful programs need to be monitored in an ongoing fashion to ensure their effects are maintained as circumstances change over time.

Conclusions

In conclusion, we highlight the following findings and recommendations:

- Violence affects all of us at some level and represents an issue of vital national and international importance.

- Some interventions have been shown by rigorous research to reduce violence precursors, violence, and arrest. However, many interventions aimed at reducing violence have not been sufficiently evaluated or proven effective, and a few widely implemented programs have been shown to be ineffective and perhaps harmful.

- Programs that seek to prevent violence through fear and tough treatment appear ineffective. Intensive programs that aim at developing skills and competencies can work.

- Interventions to reduce violence may be context dependent. Research must proceed in varying contexts and take account of local culture.

- Attention to diversity among investigators involved in violence prevention research is important. Universities and funding agencies should make improving the situation a priority.

- We encourage funding sufficient to promote the dissemination of violence prevention programs that have been shown to be effective through rigorous RCT research. Funding must include support for research, and monitoring must continue as these programs are more widely implemented.

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